Detailed Description Text - DETX (38):
The noise removing unit 56 performs smoothing on the color region signals of the image data using spatial filters in response to the instructions from the CPU 55. Image noise is reduced by performing moving average with weighting addition on the periphery pixels around the central pixel using two-dimensional smoothing filters. Thus, smooth images of high quality can be achieved.

Detailed Description Text - DETX (42):
To the density converter 58, the image data of r, g, and b have also been inputted directly from the shading correction unit 52 prior to smoothing. The density converter 58 selects either the image data from the rgb converter 57 or the image data from the shading correction unit 52 in response to the instructions from the CPU 55, and converts them into density data.

Detailed Description Text - DETX (43):
When the image data is judged to belong to a uniform density region according to the instructions from the CPU 55, the density converter 58 selects the image data outputted from the rgb converter 57 by an internal selector, and converts them into density data. When the image data is judged to belong to an edge portion, the density converter 58 selects the image data outputted

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
2	☐	P	US 5357353 A	19941018	Image for
3	☐	P	US 6028957 A	20000222	Image for
4			US 5966222 A	19991012	Image for

US006028957A

s Patent [:5]
[11] Patent Number: 6,028,957
[45] Date of Patent: Feb. 22, 2000

D APPARATUS HAVING A
SG UNIT
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Co., Ltd., Osaka, Japan

11
1997
ation Priority Data
an 8-050163
..... G06K 9/40
..... 382/162; 362/167; 358/530
..... 382/162, 167,
382/254; 358/530, 532, 463
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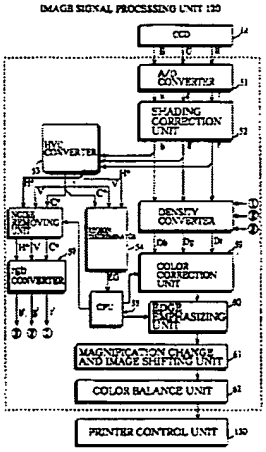
5,553,725 10/1996 Suzuki et al. 358/539
5,689,599 11/1997 Shinomura et al. 382/254
Primary Examiner—Thomas D. Lee
Assistant Examiner—Stephen Brinich
Attorney, Agent, or Firm—McDermott, Will & Emery

[57] ABSTRACT
Pixel data comprising density data of R, G, and B obtained by reading an original with a CCD image sensor are subjected to shading correction by a shading correction unit, and then converted into color region signals H*, V, and C* in the Munsell color space by a first converter. According to the variances of V, a region discriminance determines whether each pixel data belongs to an edge portion of the original image or whether it belongs to a uniform density region of the original image. A noise removing unit performs noise removal by performing smoothing on color region signals H*, V, and C* of the pixel data which have been determined to belong to uniform density regions. A second converter converts the noise-removed color region signals into pixel data of R, G, and B.

16 Claims, 15 Drawing Sheets



EAST Browser - L17: (5) 16 same (bla... | US 5357353 A | Tag: S,T1 | Doc: 2/5 (SORTED) | Format: KWIC

File Edit View Tools Window Help

US-PAT-NO: 5357353

DOCUMENT-IDENTIFIER: US 5357353 A

TITLE: Image forming apparatus

-------- KWIC --------

Detailed Description Text - DETX (59):

First, smoothing processing (method of moving averages with weighting) on the read data R, G and B of a central pixel under processing is performed in a local region including the pixel. Then, the levels of R, G and B are compared to decide if the color of the pixel is an achromatic color or not. Further, in order to improve the reproducibility of black, the parameters .alpha., .beta. are changed at four steps (refer to FIG. 11) according to the characteristics of the region after the smoothing processing, and the UCR/BP ratios are increased as the color becomes more achromatic.

Detailed Description Text - DETX (61):

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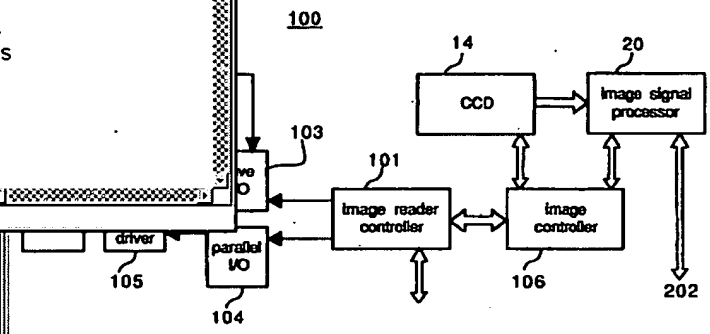
	U	1	Document ID	Issue Date	
1			US 20030144746 A1	20030731	Control fc multidime
2			US 5357353 A	19941018	Image for
3			US 20030109951 A1	20030612	Monitorin multidime



EAST Browser - L18: (0) 16 and (blac... | US 6034794 A | Tag: S | Doc: 7/8 (SORTED) | Format: KWIC

File Edit View Tools Window Help

Detailed Description Text - DETX (79):

For generating a corrected pixel signal S' from the pixel signal S, a successive three pixel weighted moving average calculating unit 271 calculates a weighted moving average signal Sc of the three successive pixels S, Sp, Sa according to the equation (13), given below. ##EQU3##

Detailed Description Text - DETX (81):

In view of the fact that the MTF of the human visual perception is high when the density of an image is high, when the density represented by the density dependent signal Dx is higher than a reference density level Dr inputted from a density input unit 281, i.e., when the density D=1.0 or the corresponding luminance is lower than a reference luminance level Dr=1000 (at this time, a binary signal G1 from a comparator 277 goes high), and when the level of a contrast dependent signal Cx obtained as the difference between the preceding and following pixel signals Sp, Sa from a contrast calculating unit 276 is smaller than a reference contrast level Cr inputted from a contrast input unit 282 (at this time, a binary signal G2 from a comparator 278 goes high), and when a correction on/off switch 283 is turned on to render a binary signal G3 high, a switch control signal SE outputted from an AND gate 273 goes high. At

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
7	☐	☐	US 6034794 A	20000307	Method o sensor
8	☐	☐	US 6170319 B1	20010109	Methods

[45] Date of Patent: Mar. 7, 2000

CTING IMAGE FROM LINEAR

umma, Minamiashigara,

lm Co., Ltd., Japan

Priority Data

8-144650
G03F 3/08
358/518
358/518, 519, 0, 521, 525, 526, 528, 529

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5,870,142 3/1999 Noda et al. 348/266

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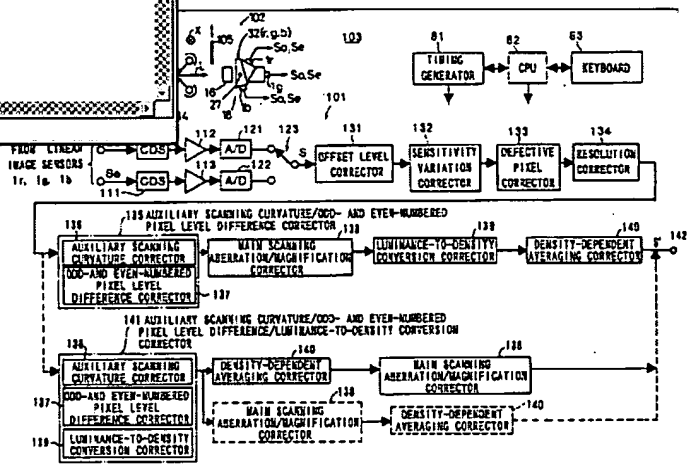
6-85556 10/1994 Japan H04N 1/393
7-283915 10/1995 Japan H04N 1/19

Primary Examiner—Leo H. Boudreau
Assistant Examiner—Shawn B Cage
Attorney, Agent, or Firm—Sughrue, Mion, Zinn, Macpeak & Seas, PLLC

[57] ABSTRACT

Light which bears image information carried by a subject is two-dimensionally read through tricolor separating optical systems with linear image sensors for the three colors R, G, B. Odd- and even-numbered pixel signals outputted from the linear image sensors 1 are alternately read to produce an image signal which comprises a series of pixel signals. The image signal is corrected successively by an offset level corrector, a sensitivity variation corrector, an auxiliary scanning curvature/odd- and even-numbered pixel level difference corrector, a main scanning aberration/magnification corrector, and a luminance-to-density conversion corrector, thereby producing an image signal for producing a high-quality reproduced image.

14 Claims, 11 Drawing Sheets



Detailed Description Text - DETX (38):

The histogram generation unit 35 determines the possibility that characters of a pattern are contact with each other based on the ratio of the width of a pattern to the width of an average character when characters are horizontally written; the ratio of the height of a pattern to the height of an average character when characters are vertically written; and the height-to-width ratio, etc. of the enclosing rectangle of a pattern. When it is determined that the pattern contains contact characters, the number of black picture elements is counted in the direction vertical to the character string, and a histogram of the number of black picture elements is generated after being smoothed using a moving average.

Detailed Description Text - DETX (126):

In FIG. 12B, the histogram generation unit 35 obtains the histogram of the number of black picture elements by vertically scanning the patterns shown in FIG. 12A, and smooths it with a moving average, etc.

Claims Text - CLTX (15):

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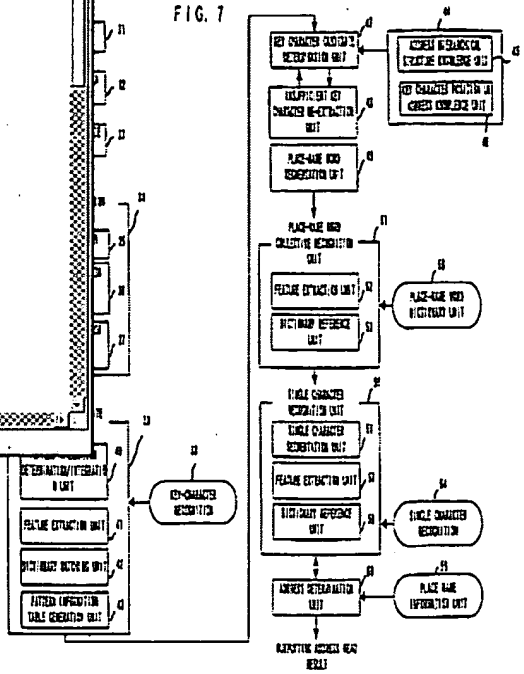
	U	1	Document ID	Issue Date	
1			US 6535619 B1	20030318	Address r
2			JP 08129007 A	19960521	Analysis c pre-burni reacted g
3			JP 06164987 A	19940610	CLAMPIN

FIG. 7

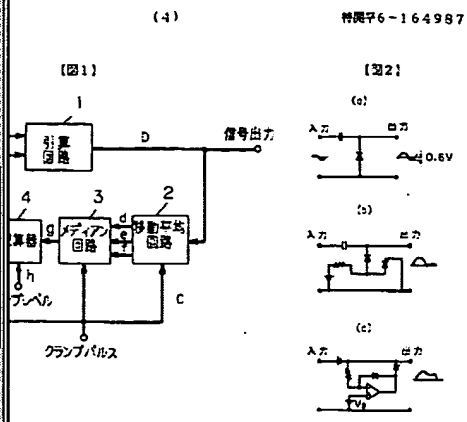


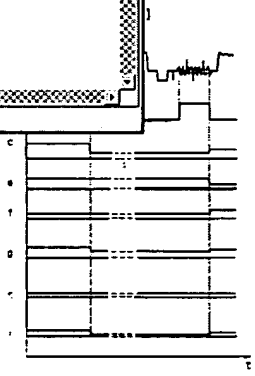
INT-CL (IPC): H04N005/18

ABSTRACT:

PURPOSE: To provide a clamping circuit capable of stably clamping a black level to a clamp level even for video signals in which pulse noise is mixed concerning the clamping circuit of the video signals.

CONSTITUTION: A moving average circuit 2 samples the output signals of a subtracting circuit 1 by clamp pulses for the prescribed period of time and converts the sampled signals to moving average values by plural moving average filters. A median circuit 3 converts the plural moving average values to a median value and a subtractor 4 subtracts the clamp level from the median value and outputs a control value. A memory circuit 5 holds the previous control value until such fine as asmpling is performed by the next clamp pulse and the next control value is obtained, and then stably clamps the black level of the video signals to the clamp level.





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	U	1	Document ID	Issue Date	
2			JP 08129007 A	19960521	Analysis c pre-burni reacted g
3			JP 06164987 A	19940610	CLAMPII
4			US 20020054395 A1	20020509	Color ima processir

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DERWENT-ACC-NO: 1992-124771

DERWENT-WEEK: 199216

TITLE: Document image reading appts. with improved shading correction - produces fresh reference data by smoothing in moving-average filter before application to shading correction circuit

INVENTOR: HIROTA, Y

PATENT-ASSIGNEE: MINOLTA CAMERA KK[MIOC]

PRIORITY-DATA: 1990JP-0262911 (September 28, 1990)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
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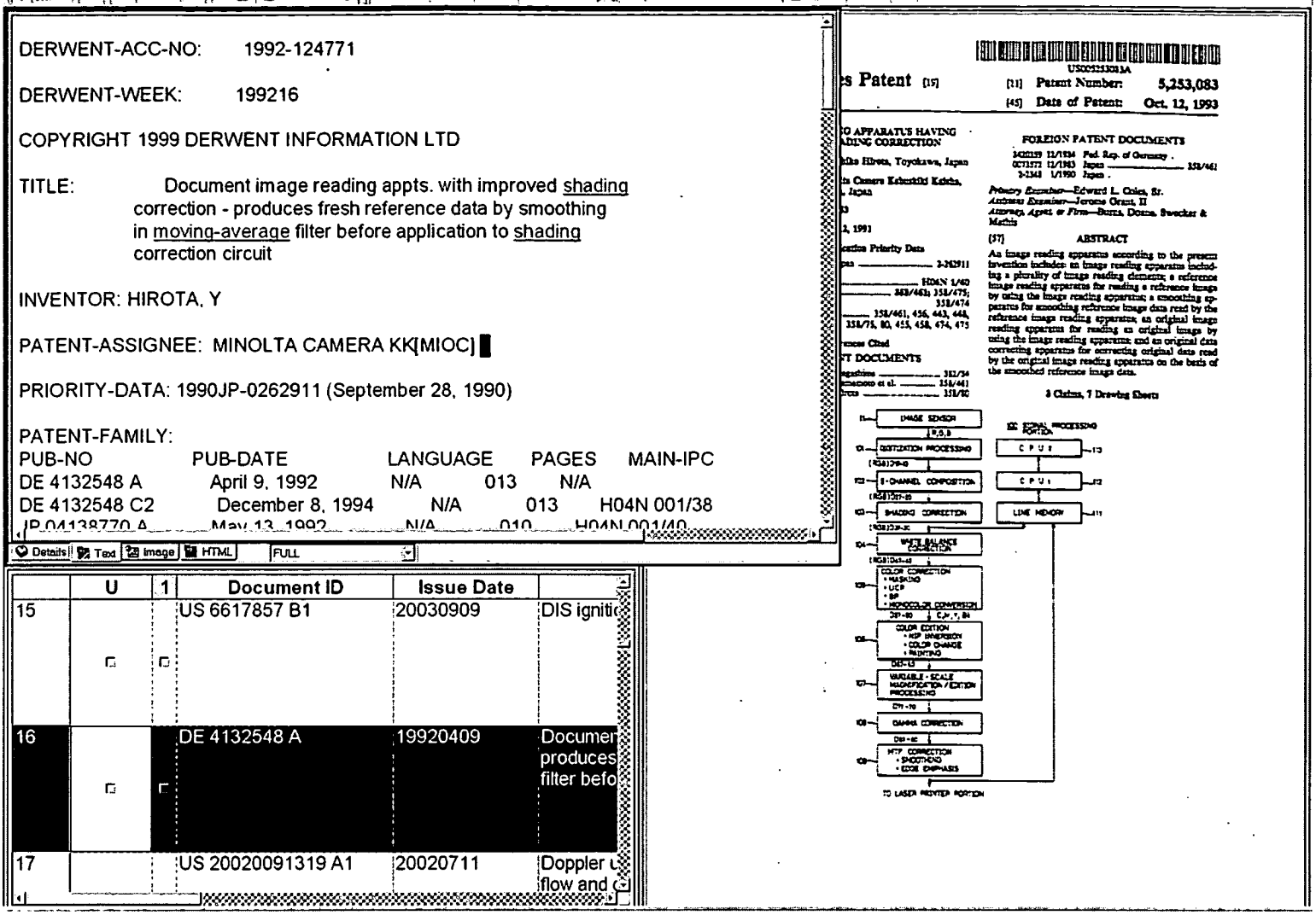
16	☐	☐	DE 4132548 A	19920409	Documer produces filter befo
17			US 20020091319 A1	20020711	Doppler U flow and C



US005253083A

s Patent [19]

[11] Patent Number: 5,253,083

[45] Date of Patent: Oct. 12, 1993

O APPARATUS HAVING ADING CORRECTION

Mie Hirota, Toyokawa, Japan

n Camera Kabushiki Kaisha, , Japan

3

3, 1991

ication Priority Data

pan 2-262911

..... H04N 1/40

..... 358/463; 358/475; 358/474

..... 358/461, 456, 463, 448, 358/75, 80, 455, 458, 474, 475

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2-2343 1/1990 Japan .

Primary Examiner—Edward L. Coles, Sr.
Assistant Examiner—Jerome Grant, II
Attorney, Agent, or Firm—Burns, Doane, Swecker & Mathis

[57] ABSTRACT

An image reading apparatus according to the present invention includes: an image reading apparatus including a plurality of image reading elements; a reference image reading apparatus for reading a reference image by using the image reading apparatus; a smoothing apparatus for smoothing reference image data read by the reference image reading apparatus; an original image reading apparatus for reading an original image by using the image reading apparatus; and an original data correcting apparatus for correcting original data read by the original image reading apparatus on the basis of the smoothed reference image data.

3 Claims, 7 Drawing Sheets

Detailed Description Text - DETX (74):

The results from the in vitro studies provided motivation for conducting an in vivo study. The electronic system was used to collect autofluorescence images from colonic adenomas in vivo. In the this system, an SNR of over 30 was attained as well, which exceeded the minimum SNR requirement of 4. Fluorescence images were collected from 14 adenomas and 6 hyperplastic polyps from 30 patients undergoing routine colonoscopy. The fluorescence images were collected in a 33 ms frames, and were processed by dividing the raw fluorescence image with a moving average image. The processed images displayed regions of mucosa with a probability of containing dysplasia in the form of adenomas, as verified on histology. With the threshold set to 75% of the average normal intensity, a sensitivity of 86% was achieved for detecting adenomas and a specificity of 100% was attained for hyperplastics. On average, the ratio between the fluorescence intensity of normal mucosa to that from adenomas was 2.0.+-.0.6 and to that from hyperplastic polyps was 1.1.+-.0.2. The diseased regions on fluorescence best corresponded to the adenoma on white light when the colonoscope was at normal incidence. At higher angles there were greater effects from shadows. These results showed that dysplasia can be identified on fluorescence images in vivo.

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	U	1	Document ID	Issue Date	
24			US 20030120365 A1	20030626	Flicker cc
25			US 6537211 B1	20030325	Flouresc
26			US 20030191368 A1	20031009	Fluoresc

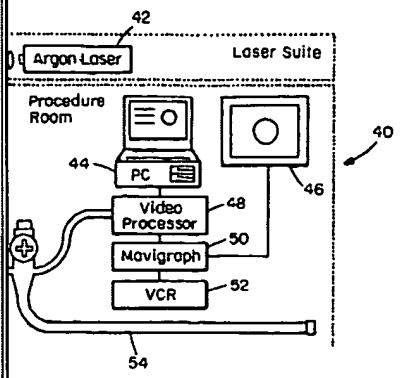

FIG. 3

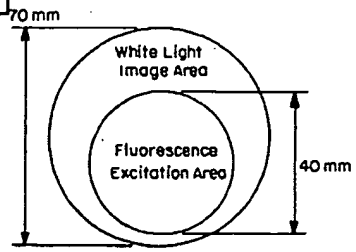

FIG. 4

the density value of an attentional pixel converted so as to increase the difference of gradation rather than the attentional pixel of an image.

SOLUTION: A contrast processing circuit 16 compares the attentional pixel of a source image with a mean value, and when the density of the attentional pixel is close to the mean value and is white rather than a certain determined value, the level is changed by converting the pixel to white. Then, a maximum black value, a maximum white value, a mean value and the density value of the attentional pixel are detected from the information of respective pixels in a prescribed mask inside the image, the mean value is found from the information of density around or near the attentional pixel by a moving average method, and when the density of the attentional pixel is close to the mean value and the result of the mean value is close to white, the attentional pixel is changed into white pixel, but when the result of the mean value is close to black, the attentional pixel is changed into black pixel. Next, when the gradation of respective pixels in the mask is remarkably dispersed, the difference of gradation is widened in the mask, density converting processing is performed and the density value of the attentional pixel, which is converted to enlarge the difference of gradation rather than the attentional pixel of the image, is extracted.

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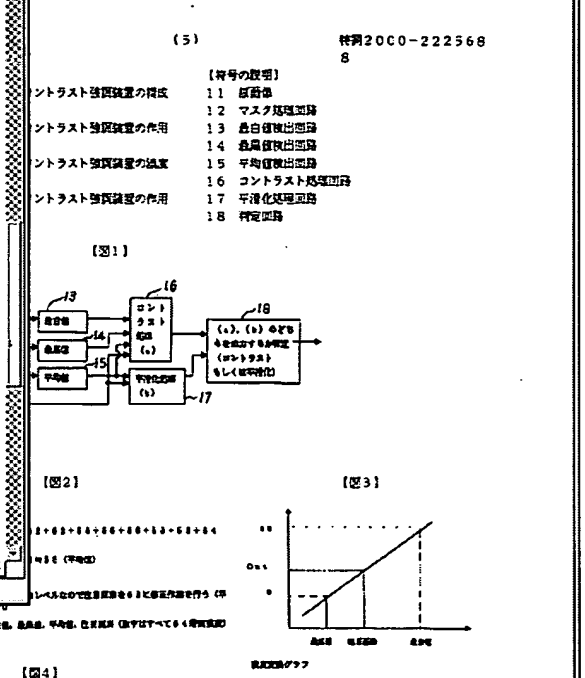

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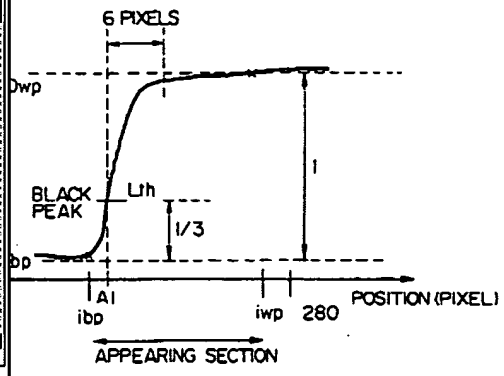
27	☐	☐	US 4541633 A	19850917	Game wit
28	☐	☐	JP 2000222568 A	20000811	IMAGE C CONTRA
29			US 5357353 A	19941018	Image for

Detailed Description Text - DETX (26):
The correcting means 409 repeats the above procedure with all of the one line of density data. Subsequently, the correcting means 409 searches for a white peak (Dwp) and a black peak (Dbp) in the one line of density data subjected to the above moving average processing, while sequentially updating their positions (steps 2-c through 2-g).

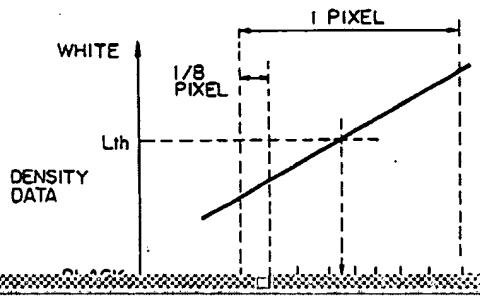
Detailed Description Text - DETX (29):
The correcting means 409 compares with the adaptive threshold L.sub.th the one line of density data subjected to the moving average processing between the pixels where the white pixel (Dwp) and black peak (Dbp) respectively appeared. As shown in FIG. 18, the correcting means 409 determines the address A1 of the first one of seven consecutive pixels over which density data above the adaptive threshold L.sub.th continuously appear (step 2-i). In FIG. 18, ibp and iwp respectively indicate a black peak position and a white peak position. That is, the correcting means 409 selects, as the threshold L.sub.th, a medium value dividing the range between the white peak (Dwp) and the black peak (Dbp) in a ratio of 1:2, and determines a portion where the following six consecutive pixels are above the threshold L.sub.th to be a boundary. As shown in FIG. 19, the correcting means 409 executes linear interpolation with the density data of

Fig. 18



	U	1	Document ID	Issue Date	
29			US 5357353 A	19941018	Image for
30			US 6330050 B1	20011211	Image pr distortion
31			JP 2003125177 A	20030425	IMAGE R

Fig. 19



US-PAT-NO: 5253083

DOCUMENT-IDENTIFIER: US 5253083 A

TITLE: Image reading apparatus having improved shading correction

——— KWIC ———

Detailed Description Text - DETX (45):
Thus, shading correction circuit 103a includes a smoothing portion 40 for carrying out a moving average processing by separating the pixels into odd number pixels and even number pixels. Shading correction circuit 103a carries out a correction of a black level on the basis of reference data XK1 corresponding to the odd number pixels and reference data XK2 corresponding to the even number pixels.

Detailed Description Text - DETX (63):
According to the foregoing embodiment, since the number of object pixels for

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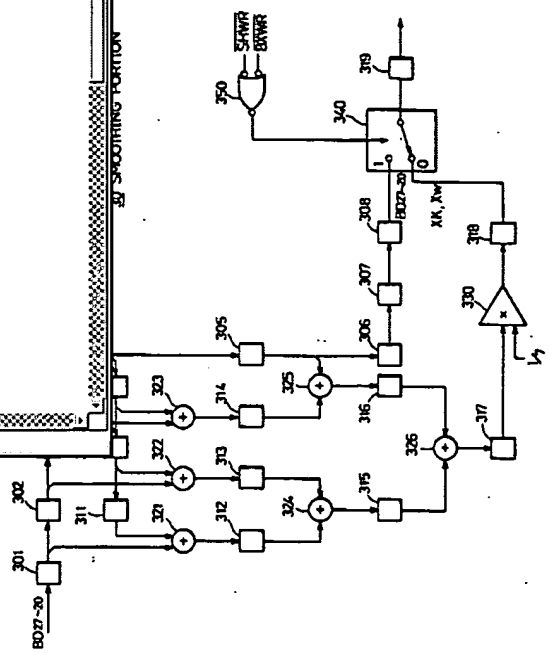
	U	1	Document ID	Issue Date	
32	□	□	JP 2003125177 A	20030425	Image rea correctio calculate block of w
33	□	R	US 5253083 A	19931012	Image rea
34			US 5870142 A	19990209	Image se



——— KWIC ———

Detailed Description Text - DETX (36):

In order to make a good one-bit-per-pixel image of a black and white document, the system must use an adaptive thresholding algorithm which varies the threshold value across the image according to its background value at each pixel. Some adaptive thresholding algorithms (e.g. R. J. Wall. "The Gray Level Histogram for Threshold Boundary Determination in Image Processing with Applications to the Scene Segmentation Problem in Human Chromosome Analysis", Ph.D. dissertation. UCLA. 1974) produce very good results but require more than one pass through the image, and have been found to be too slow to support user interaction. It is possible to get nearly as good a result in a single pass, however, by calculating the threshold value at each point from an estimate of the background illumination based on a moving average of local pixel intensities: specifically the local pixels contained within about 1/8th the width of the image. This method is much faster and can also be combined with a scaling operation if necessary.

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35	☐	☐	US 20020054374 A1	20020509	Image-re obtaining from a re
36	☐	☐	US 5511148 A	19960423	Interactiv
37			US 6108321 A	20000822	Interferer

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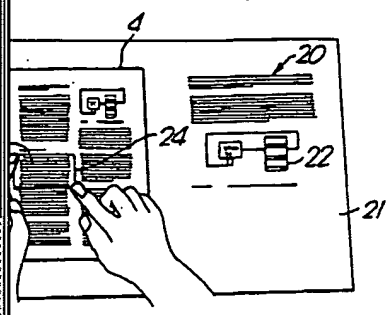

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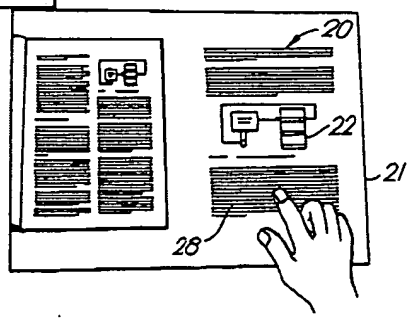

ABSTRACT:

PURPOSE: To obtain the line detector which decreases the amount of binary processing data, can detect lines at high speed and is hardly affected by pitching or the like.

CONSTITUTION: The white line is detected by processing an image obtained by a CCD camera 10 and in this case, the white line is detected by executing the black-and-white binarizing of image signals. Only concerning the image signals in a prescribed range, however, this binarizing processing is executed. In order to decide this processing range, a position moving and averaging plural white line detecting positions in the past is calculated each time and based on this position, the white line position in the next time is estimated. Then, a prescribed range near the white line position estimated from the image data obtained by the CCD camera 10 is defined as the processing range.

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	U	1	Document ID	Issue Date	
38			US 5811779 A	19980922	Laser ba nuclear re
39			JP 04299799 A	19921022	LINE DE
40			US 6314131 B1	20011106	Method a averaged

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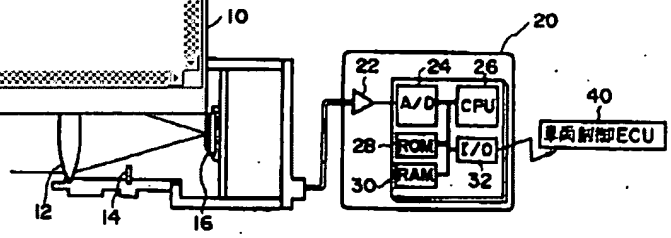
【図8】自線座標出力、白線位置予測の動作を示すフローチャートである。
【図9】自線座標出力、白線位置予測の動作を示すフローチャートである。
【図10】自線座標出力、白線位置予測の動作を示すフローチャートである。
【図11】白線位置予測の手法を示す説明図である。
【図12】白線位置予測の動作を示すフローチャートである。
【図13】エラー処理の動作を示すフローチャートである。
【図14】CCD中心考慮方の動作を示すフローチャートである。
【符号の説明】
10 CCDカメラ
20 白線検出ECU
24 AD変換器
26 CPU

【図1】



10:CCDカメラ
16:CCDリニアセンサ
20:白線検出ECU

実施例の構成

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Detailed Description Text - DETX (5):

A threshold for the binary decision of a given pixel ("0" for black, "1" for white) should be set in such a way that if it belongs to the foreground of the scanned document, e.g. is significantly darker than other pixels in its neighborhood, it is called black. A technique useful for that purpose is called adaptive or dynamic thresholding and this technique is e.g. described in "Image Thresholding for Optical Character Recognition and Other Applications requiring Character Image Extraction" from IBM J. RES. DEVELOP. vol 27, no.4, 1983, by J. M. White and G. D. Rohrer. It should be noted that the terms "adaptive thresholding" and "adaptive thresholding circuit" are to be interpreted very broadly in the present application, covering the use of adaptive threshold techniques based on e.g. the moving average, area average, local average or statistical distribution of the grey tones represented in the scanned data. The threshold determination is performed on-line, i.e. the threshold values are updated simultaneously with data being scanned. A preferred way of doing so is described in the U.S. Pat. No. 5,377,020 assigned to the assignee of this case and hereby incorporated by reference.

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
52	☐	☐	US 5548110 A	19960820	Optical er... processir... such as c...
53	☐	☐	US 5926570 A	19990720	Optical s...
54			US 20040008247 A1	20040115	Optical w... apparatu...

[45] Date of Patent: Jul. 20, 1999

...SING DITHERING ...RESHOLD

...t, Ålsgårde, Denmark

...Denmark

... G06K 9/36; G06K 9/46
...82/237; 382/270; 358/455; 358/464; 358/466
... 382/237, 270; ...5, 457, 458, 459, 468, 474, 464, 465, 466

Cited

...OCUMENTS

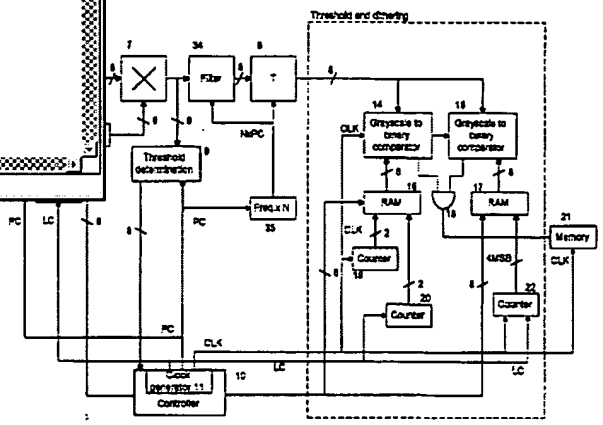
...t al. 358/459
..... 358/468
..... 358/474

Primary Examiner—Thomas D. Lee
Attorney, Agent, or Firm—Brinks Hofer Gilson & Lione

[57] ABSTRACT

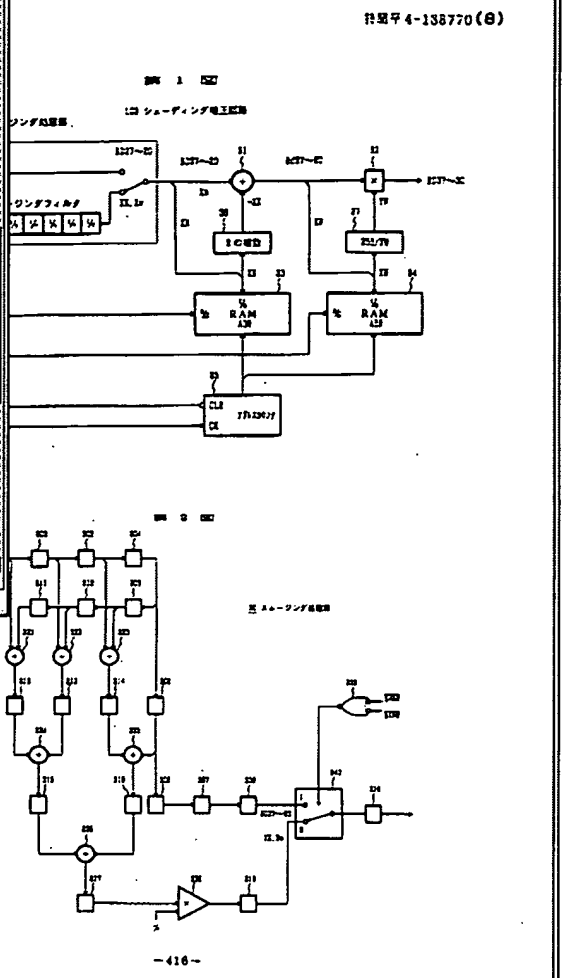
A method and apparatus of preparing the reproduction of a document based on scanning the original including generating a signal representing grey tone values for points along lines across the scanned original and providing a set of threshold values for said points. The set of threshold values being determined so that grey tone values in a uniform area on the original are converted into a uniform black or white representation in a first one-bit representation. The method and apparatus provides parameter values for said points in a dither circuit, and converts the grey tone signal received from the line scanning unit into a signal comprising a second one-bit representation. The conversion into a one-bit representation is performed by depending on the individual grey tone values compared with the present threshold values and the dither circuit output for the points in question.

36 Claims, 8 Drawing Sheets



PURPOSE: To reduce the influence of external noises against the picture quality by generating reference picture data while performing a smoothing processing against the picture data reading the reference picture and correcting the picture data reading an original picture based on the reference picture data.

CONSTITUTION: When power source is supplied to an image reader part IR, at first, are image sensor 11 is driven in a state turning off an exposing lamp 17 to obtain reference data XK with black label, and picture data BD27 to 20 with black label are inputted to a smoothing processing part 30. The smoothing processing part 30 performs the smoothing processing performing, so to speak, moving average against the picture data BD27 to 20. In short, the processing replacing the values of picture data BD27 to 20 for noted picture element (noted picture element) to the average value of the picture data BD27 to 20 for seven picture elements totaling the noted picture element and the six picture elements on both sides (three for each side) against respective picture data BD27 to 20 for each picture element to be successively inputted according to a clock signal SYNCK.



	U	1	Document ID	Issue Date	
62			US 6704093 B2	20040309	Scanning device m
63			JP 04138770 A	19920513	SHADIN
64			JP 10009840 A	19980116	SURFAC

EAST Browser - L3: (65) 1 with 2 | US 5873959 A | Tag: S | Doc: 1/65 (SORTED) | Format: KWIC

File Edit View Tools Window Help

US-PAT-NO: 5873959

DOCUMENT-IDENTIFIER: US 5873959 A

TITLE: Adaptive control for reheat furnace

——— KWIC ———

Detailed Description Text - DETX (10):

The weighted, moving average is calculated so that the most recent slab values have the greatest effect on the weighted average. While using a weighted, moving average is preferred, applications of this invention may exist wherein a simple moving average will suffice.

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
1	☐	☐	US 5873959 A	19990223	Adaptive
2	☑	☐	US 4989165 A	19910129	Apparatu
3	☐	☐	US 5249484 A	19931005	Apparatu based on

US005873959A

s Patent [:9]

[11] Patent Number: 5,873,959

[45] Date of Patent: Feb. 23, 1999

TROL FOR REHEAT

J. Schurko, Pittsburgh; Frank nutti, Aliquippa, both of Pa.

Technologies Inc., Coraopolis,

1993

Application Data

. 742,770, Aug. 9, 1991, abandoned.

..... C21D 1/34

..... 148/511; 266/87

..... 148/511; 266/87

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..... 266/87

..... 148/511

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"Automatic slab heating control at Ireland's 80-in. hot strip mill", Timothy A. Vaskeki et al., AISE Year Book, Dec. 1986, pp. 577–584.

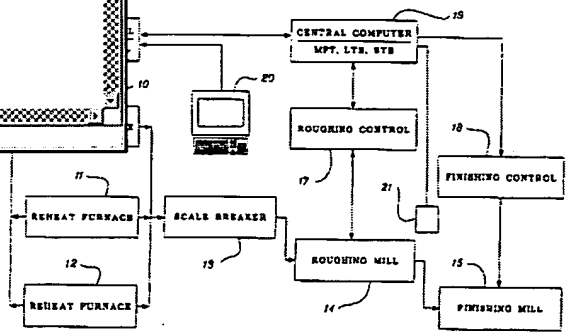
Primary Examiner—Scott Kastler

Attorney, Agent, or Firm—Webb Ziesenheim Bruening Logsdon Orkin & Hanson, P.C.

[57] ABSTRACT

A method of controlling a reheat furnace to deliver pieces at an aim discharge temperature comprises the steps of determining the ratio between calculated reheat furnace discharge temperatures and measured temperatures of pieces in a rolling mill receiving the output of the reheat furnace, filtering this ratio based upon time in the rolling mill to provide the current filtered relationship between calculated discharge temperatures and said measured temperatures to provide filtered ratios, comparing desired temperatures in the rolling mill with said measured temperatures of pieces in the rolling mill to establish error values, filtering the error values based upon time in the mill to provide filtered error values, and processing the filtered error values and the filtered ratios to establish a short-term bias to the aim exract temperature.

17 Claims, 3 Drawing Sheets



EAST Browser - L3: (65) 1 with 2 | US 6363512 B1 | Tag: S | Doc: 10/65 (SORTED) | Format: KWIC

File Edit View Tools Window Help

Detailed Description Text - DETX (35):

Thereafter, as represented by an activity block 715, a moving average is computed from the weighted average values calculated for the all of the bits starting from the preamble of the data block which have been monitored for phase content. This moving average is recalculated each time a new value is calculated within the activity block 705. Advantageously, at the beginning of each data block, the average value is set to some number indicating near maximum phase content. As the moving average is calculated this value varies as determined by the actual phase content of the data stream. If this moving average falls beneath a certain threshold value, then this indicates that the data stream has a very low phase content, so that a bit pattern should be inserted to improve phase calibration. The reason for this is that the value stored within the register R.sub.5 is a time delayed version of the value stored within the register R.sub.3. Thus, the difference between the values stored within the register R.sub.5 and R.sub.3 is a measure of the rate of change of the data stream at a sample time corresponding to the value stored within the register R.sub.4. Thus, this differential value measures the phase content so that from this differential value, an indication can be made as to whether or not a bit pattern needs to be inserted in order to increase the phase content of the data stream.

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
9			US 6513139 B2	20030128	Digital da
10			US 6363512 B1	20020326	Digital da
11			US 6260171 B1	20010710	Digital da

US006363512B2

ates Patent

(10) Patent No.: US 6,363,512 B2

(45) Date of Patent: Mar. 26, 2002

ECORDING CHANNEL

D. Gray, La Jolla, CA (US)

d Data, Inc., San Diego, CA

o any disclaimer, the term of this extended or adjusted under 35 54(b) by 0 days.

2001

Application Data

No. 09/716,351, filed on May 21, 6,250,171, which is a division of 679, filed on Dec. 11, 1997, now Pat. a continuation-in-part of application Feb. 9, 1996, now Pat. No. 5,712,

G11C 29/00; G06F 11/00

714/771; 714/701; 369/275.3

714/771, 769, 761, 781, 752, 701; 369/275.3

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EP	0 347 694 A2	12/1989
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EP	0 511 496 A2	11/1992
EP	0 593 173 A2	4/1994
GB	2 288 952 A	8/1995
JP	06124451	5/1994
JP	07111047	4/1995
WO	WO 87/05086	10/1987
WO	WO 93/10534	5/1993
WO	WO 94/07332	3/1994
WO	WO 97/29486	8/1997

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Price, R., et al, "An Experimental, Multilevel, High Density Disk Recording System", IEEE Transactions On Magnetics, vol. Mag-14, No. 5, Sep. 1978.

* cited by examiner

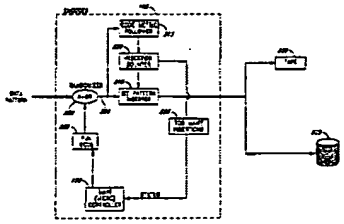
Primary Examiner—Christine T. Tu

(74) *Attorney, Agent, or Firm*—Knobbe Martens Olson & Bear LLP

(57) ABSTRACT

An apparatus for encoding digital data for storage on a data storage medium includes a non-deterministic randomizer code generator. The randomizer code generator may select different randomizer codes for different portions of the data to be stored. The randomizer code used to randomize a given portion of the data may be stored on the media for use in subsequent data retrieval.

3 Claims, 13 Drawing Sheets



EAST Browser - L3: (65) 1 with 2 | US 5282255 A | Tag: S | Doc: 35/65 (SORTED) | Format: KWIC

File Edit View Tools Window Help

TITLE: Method and apparatus for processing both still and moving visual pattern images

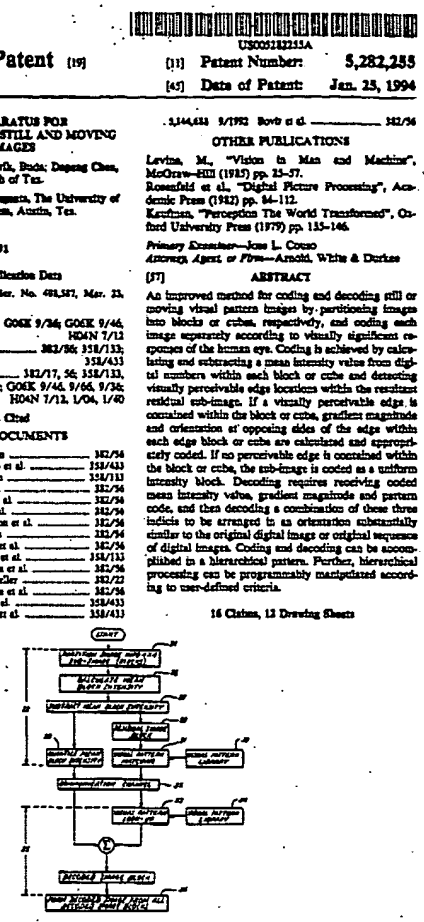
——— KWIC ———

Detailed Description Text - DETX (36):

At very high compression ratios, the predominant distortion that occurs in the present invention are block effects arising from coarse quantization of the average intensities in uniform (non-edge) blocks. Block effects are manifested as visual false contours occurring between blocks of similar average gray level. To correct this problem, simple block smoothing algorithms may be applied to the mean block intensity, without degrading the image details (edges). An efficient smoothing technique is to apply a smoothing filter to the mean intensity before the edges are superimposed. It is found that a simple 3.times.1 moving average filter applied along each dimension of the mean intensity sub-image prior to adding the edge block, decreases the visual distortion. The moving average filter is simply the weighted average of three adjacent points. TABLE I shows the computation complexity of a 4.times.4 decoding and smoothing operation when both equal weight and nonequal weights are used:

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
35	☐	☐	US 5282255 A	19940125	Method a pattern in
36	☐	☐	US 5549655 A	19960827	Method a sleep apr
37			US 5144688 A	19920901	Method a



US005282255A

s Patent [19] [11] Patent Number: 5,282,255

[45] Date of Patent: Jan. 25, 1994

PPARATUS FOR
TH STILL AND MOVING
N IMAGES

C. Berib, Buda; Deqing Chen, both of Tex.

of Regents, The University of System, Austin, Tex.

4

7, 1991

Application Data

of Ser. No. 488,587, Mar. 23, 488.

G06K 9/36; G06K 9/46; H04N 7/12

382/56; 358/133; 358/433

382/17, 56; 358/133, 433; G06K 9/46, 9/66, 9/36; H04N 7/12, 1/04, 1/40

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ma et al.	382/56
ri et al.	382/56
Anderson et al.	382/56
Lawson	382/56
uzuki et al.	382/56
Jensen et al.	358/133
Iyasaka et al.	382/56
Chamberlain	382/22
Iyasaka et al.	382/56
ard et al.	358/433
5,089,884 2/1992 Suzuki et al.	358/433

5,144,688 9/1992 Bovik et al. ——— 382/56

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Levine, M., "Vision in Man and Machine", McGraw-Hill (1985) pp. 25-37.

Rosenfeld et al., "Digital Picture Processing", Academic Press (1982) pp. 84-112.

Kaufman, "Perception The World Transformed", Oxford University Press (1979) pp. 135-146.

Primary Examiner—Jose L. Couso

Attorney, Agent, or Firm—Arnold, White & Durkee

[57] ABSTRACT

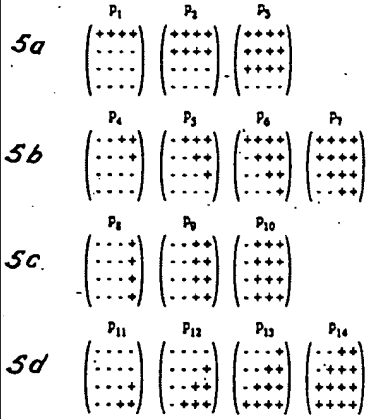
An improved method for coding and decoding still or moving visual pattern images by partitioning images into blocks or cubes, respectively, and coding each image separately according to visually significant responses of the human eye. Coding is achieved by calculating and subtracting a mean intensity value from digital numbers within each block or cube and detecting visually perceivable edge locations within the resultant residual sub-image. If a visually perceivable edge is contained within the block or cube, gradient magnitude and orientation at opposing sides of the edge within each edge block or cube are calculated and appropriately coded. If no perceivable edge is contained within the block or cube, the sub-image is coded as a uniform intensity block. Decoding requires receiving coded mean intensity value, gradient magnitude and pattern code, and then decoding a combination of these three indicia to be arranged in an orientation substantially similar to the original digital image or original sequence of digital images. Coding and decoding can be accomplished in a hierarchical pattern. Further, hierarchical processing can be programmably manipulated according to user-defined criteria.

16 Claims, 12 Drawing Sheets

——— KWIC ———

Detailed Description Text - DETX (33):

At very high compression ratios, the predominant distortion that occurs in the present invention are block effects arising from coarse quantization of the average intensities in uniform (non-edge) blocks. Block effects are manifested as visual false contours occurring between blocks of similar average gray level. To correct this problem, simple block smoothing algorithms may be applied to the mean block intensity, without degrading the image details (edges). An efficient smoothing technique is to apply a smoothing filter to the mean intensity before the edges are superimposed. It is found that a simple 3.times.1 moving average filter applied along each dimension of the mean intensity subimage prior to adding the edge block, decreases the visual distortion. The moving average filter is simply the weighted average of three adjacent points. TABLE I shows the computation complexity of a 4.times.4 decoding and smoothing operation when both equal weight and nonequal weights are used:



	I		II	
MAG. MIN.	30		10	
MAG. MAX.	30		80	
	1		8	
BLOCK TYPE	UNIFORM	EDGE	UNIFORM	EDGE
BLOCK TYPE INDICATOR	1	1	1	1
MEAN INTENSITY	5	3	6	4
PATTERN INDEX		2		3
GRADIENT INDEX				3
POLARITY INDICATOR		1		1
TOTAL BITS	$n_\mu = 6$	$n_\theta = 7$	$n_\mu = 7$	$n_\theta = 12$
TOTAL BPP	(0.375, 0.4375)		(0.4375, 0.75)	
COMPRESSION RATIOS	(18.29, 21.33)		(10.67, 18.29)	

Fig. 6

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
36			US 5549655 A	19960827	Method a sleep apr
37			US 5144688 A	19920901	Method a
38			US 5414619 A	19950509	Method a learning f

INT-CL (IPC): H04N007/13, H04L012/56 , H04N007/14 , H04N011/04

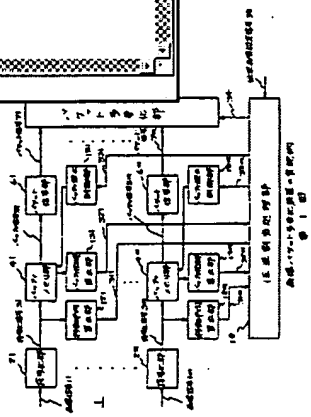
ABSTRACT:

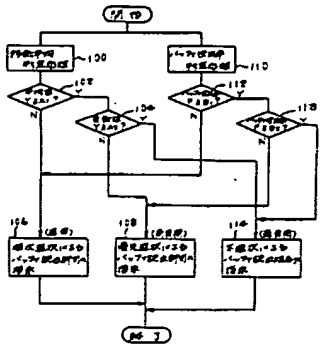
PURPOSE: To prevent missing of picture information at receiver side and deterioration of a picture by comparing a moving average of input speeds of input signals to a buffer means with 1st and 2nd threshold levels respectively, giving priority to a signal of a terminal equipment and processing the signal into a packet when the moving average exceeds the 1st threshold level.

CONSTITUTION: Moving average calculation sections 121-12n apply weight average calculation to a time series data of a picture coded signal by a weight function to obtain a moving average Y. Then threshold levels A1, A2 of the moving average Y are provided to set a normal area, a high load area and an overload area. A transmission assignment processing section 10 applies packet processing to a signal at a terminal equipment when the moving average Y enters the overload area with priority. When the moving average Y enters the high load area, the packet processing is stopped. When the moving average is a history for processing period, it represents prediction that the tendency at a current point of time will continue for a while. Thus, the capacity excess of an exchange network is prevented in advance.

Details | Text | Image | HTML | FULL

	U	1	Document ID	Issue Date	
41			US 5682329 A	19971028	On-line m
42			JP 04013390 A	19920117	PICTURE
43			US 5198771 A	19930330	Potentios





EAST Browser - L3: (65) 1 with 2 | US 5982790 A | Tag: S | Doc: 60/65 (SORTED) | Format : KWIC

File Edit View Tools Window Help

US-PAT-NO: 5982790

DOCUMENT-IDENTIFIER: US 5982790 A

TITLE: System for reducing pulse-to-pulse energy variation in a pulsed laser

KWIC

Brief Summary Text - BSTX (29):

According to the method of the invention, mean pulse magnitude [M] is calculated from pulse magnitudes M.sub.i. This can be done by using all of the past magnitudes M.sub.i or a sample containing a number q of laser pulses i, where q.gtoreq.1. Consequently, mean [M] can be a weighted average or a moving average.

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
59			US 5103401 A	19920407	System fo feeder sy
60			US 5982790 A	19991109	System fo laser
61			JP 08168489 A	19960702	ULTRAS

US005982790A

s Patent [:9]

[11] Patent Number: 5,982,790

[45] Date of Patent: Nov. 9, 1999

DUCING PULSE-TO-PULSE
TION IN A PULSED LASER

Mark Grossman, Los Altos;
Volk-Dobry, San Jose, both

ve Electronics Corporation,
View, La.

48

1997

HD15 3/10

372/25; 372/69; 372/38;
372/10; 372/30

372/25, 38, 69,
372/10, 29, 30

nces Cited

T DOCUMENTS

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Kem 372/29
ss et al. 372/30
Ito 372/25

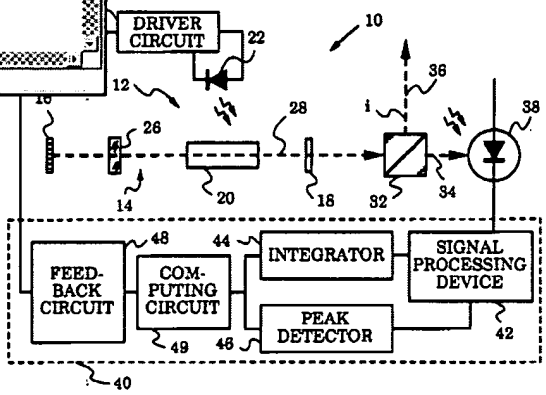
5,339,323 8/1994 Kemey et al. 372/25
5,365,532 11/1994 Kham et al. 372/31

Primary Examiner—Leon Scott, Jr.
Attorney, Agent, or Firm—Limbach Intellectual Property Services

[57] ABSTRACT

A system and method for reducing pulse-to-pulse energy and peak power variation in various types of pulsed lasers, and in Q-switched lasers in particular. The system of invention has a laser cavity with a lasing medium pumped by a pumping device for delivering to the medium a pumping energy E_{pump}. The system further includes a detection device and circuitry for determining the pulse magnitudes M_i of laser pulses i, such as peak pulse amplitudes A_i, pulse energies E_i, pulse widths W_i, or other pulse metrics. According to the method of invention, a feedback mechanism which is in communication with the pumping device ensures pulse-to-pulse stability by increasing the pumping energy E_{pump} when pulse magnitude M_i of laser pulse i exceeds a mean pulse magnitude [M] and decreasing the pumping energy E_{pump} when M_i is less than [M]. Alternatively, the feedback mechanism is in communication with the switching device which controls the variable loss factor of the Q-switch. Pulse-to-pulse peak and energy stability is achieved by decreasing the variable loss factor when M_i of pulse i exceeds the mean [M] and increasing the variable loss factor when M_i of laser pulse i is less than [M].

46 Claims, 5 Drawing Sheets



EAST Browser - L3: (65) 1 with 2 | US 6459387 B1 | Tag: S | Doc: 64/65 (SORTED) | Format: KWIC

File Edit View Tools Window Help

Detailed Description Text - DETX (19):

For example, after a route (travel path) has been determined by the navigation apparatus, or when a travel path is determined after a route has been searched, a calculation is made of a total link number of nodes located within a predetermined distance range (or preselected travel time) from a present position of the vehicle. Alternatively, an average value (simple average value, moving average value, weighted average value) of link numbers is calculated. Then, the calculated value is compared with a predetermined judging threshold value, and when this calculated value is larger than the judging threshold value, it is judged that the vehicle is traveling in the city area road. To the contrary, when this calculated value is not larger than the judging threshold value, it is judged that the vehicle is traveling on a road other than that of the city area, for example, it is judged that the vehicle is traveling on a road in a suburb, or on a superhighway, which may be readily discriminated based on the described expression 2 of the node in the table 1. It should also be noted that the travel region judging process operation based upon the link number may be applied in response to the road sort information of the node in the travel path. For instance, a judgement is made whether or not the travel path of the vehicle corresponds to the superhighway. When the travel path of the vehicle is not equal to the superhighway, another judgement is made as to whether or not the travel region corresponds to the city area

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
63			US 5895435 A	19990420	Vehicle dr apparatus force con
64			US 6459387 B1	20021001	Vehicle li
65			US 6445761 B1	20020903	X-ray cor irradiatior

US006459387B1

ates Patent

(10) Patent No.: US 6,459,387 B1

(45) Date of Patent: Oct. 1, 2002

TNG APPARATUS

bayashi; Kazuhiro Suzuki; Masuda; Takashi Inoue, all of (JP)

Manufacturing Co., Ltd., Tokyo

to any disclaimer, the term of this extended or adjusted under 35 54(b) by 17 days.

48

2000

tion Priority Data

11-293605

G08G 1/123

340/988; 362/37; 362/460; 362/465

340/988; 362/37, 362/459, 460, 465, 528, 466

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6,283,606 B1 * 9/2001 Heyard et al. 362/465

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GB 2 337 578 11/1999 B60Q/1/14

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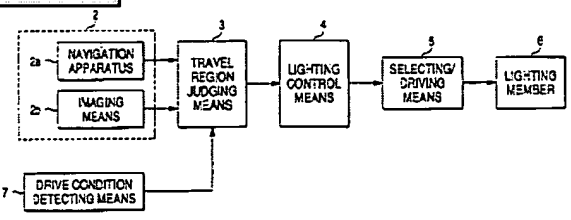
Primary Examiner—John Tweel

(74) *Attorney, Agent, or Firm*—Sughrue Mion, PLLC

(57) ABSTRACT

A vehicle lighting apparatus is provided with a travel environment detecting means (2) for acquiring information indicative of a travel environment related to a travel path of a vehicle; a travel region judging means (3) for judging a travel region where the vehicle is presently traveling based upon the information acquired by the travel environment detecting means (2); and a lighting control means (4) for lighting control of a vehicle lighting member (6) in response to a judgement signal derived from the travel region judging means (3). For example, in response to a link number of nodes of a vehicle traveling path, which is obtained from a navigation apparatus (2a) constituting the travel environment detecting means (2), a travel region is judged based upon either a total value of the link numbers or an average value thereof, and an increase/decrease trend thereof. Then, a travel region where a vehicle is traveling is judged to realize a vehicle lighting control suitable for this travel region.

20 Claims, 24 Drawing Sheets



DOCUMENT-IDENTIFIER: US 5442462 A

TITLE: Apparatus and method for smoothing images

——— KWIC ———

Current US Original Classification - CCOR (1):
358/463

Other Reference Publication - OREF (21):
"Moving Average To Decrease Noise", Real Time Video Image Processing, Quantex Corporation.

	U	1	Document ID	Issue Date	
1	☐	☐	US 5442462 A	19950815	Apparatu
2	☑	☐	US 6633684 B1	20031014	Distortior
3			US 5901243 A	19990504	Dynamic

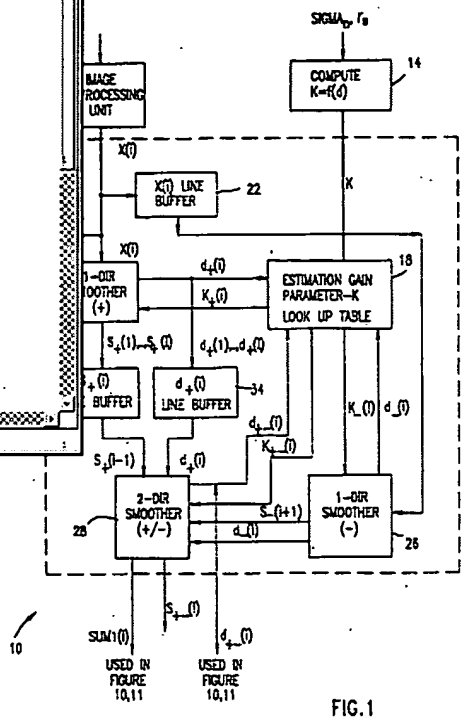


FIG. 1

EAST Browser - L10: (6) 8 and mov$3... | US 5253083 A | Tag: S.T1 | Doc: 4/6 (SORTED) | Format: KWIC

File Edit View Tools Window Help

KWIC

Detailed Description Text - DETX (28):

Smoothing portion 30 subjects image data BD27 - 20 to a smoothing processing which is a so-called moving average processing. More specifically, smoothing portion 30 replaces the value of image data BD27 - 20 of a subject pixel with the average value of image data BD27 - 20 of seven pixels in total combining the subject pixel and six pixels in opposite sides of the subject pixel (three pixels for each side), with respect to image data BD27 - 20 of each of the pixels that are sequentially input in accordance with clock signal SYNCK.

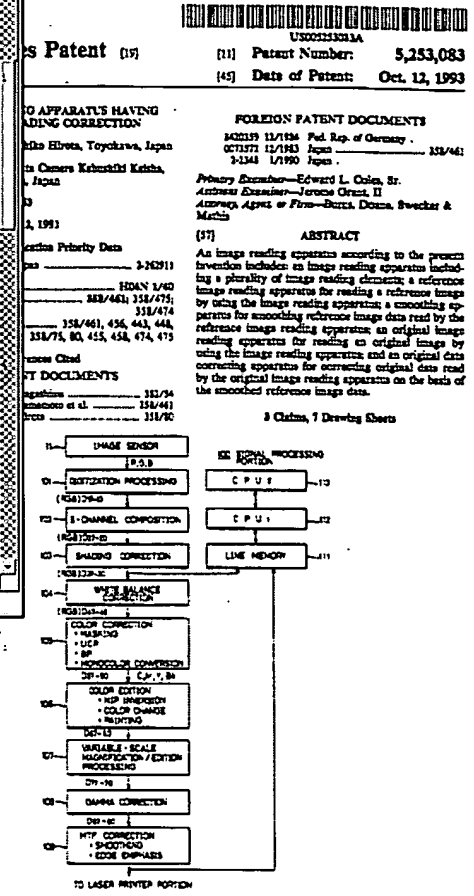
Detailed Description Text - DETX (45):

Thus, shading correction circuit 103a includes a smoothing portion 40 for carrying out a moving average processing by separating the pixels into odd number pixels and even number pixels. Shading correction circuit 103a carries out a correction of a black level on the basis of reference data XK1 corresponding to the odd number pixels and reference data XK2 corresponding to the even number pixels.

Detailed Description Text - DETX (51):

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
3			US 5901243 A	19990504	Dynamic
4			US 5253083 A	19931012	Image re
5			US 5926570 A	19990720	Optical sc



US005253083A

s Patent [19]

[11] Patent Number: 5,253,083

[45] Date of Patent: Oct. 12, 1993

O APPARATUS HAVING
ADING CORRECTION

Ikko Hirota, Toyokawa, Japan

n Camera Kabushiki Kaisha,
, Japan

3, 1991

ction Priority Data

FOREIGN PATENT DOCUMENTS

Primary Examiner—Edward L. Coles, Sr.
Assistant Examiner—Jerome Grant, II
Attorney, Agent, or Firm—Burns, Doane, Swecker & Mathis

[57] ABSTRACT

An image reading apparatus according to the present invention includes: an image reading apparatus including a plurality of image reading elements; a reference image reading apparatus for reading a reference image by using the image reading apparatus; a smoothing apparatus for smoothing reference image data read by the reference image reading apparatus; an original image reading apparatus for reading an original image by using the image reading apparatus; and an original data correcting apparatus for correcting original data read by the original image reading apparatus on the basis of the smoothed reference image data.

3 Claims, 7 Drawing Sheets

IMAGE SENSOR

DIGITIZATION PROCESSING

3-CHANNEL COMPOSITION

SHADING CORRECTION

WHITE BALANCE CORRECTION

COLOR CORRECTION
• MASKING
• UCR
• BP
• MONOCHROME CONVERSION

COLOR EDITION
• HUE EMERSION
• COLOR CHANGE
• PAINTING

VARIABLE - SCALE MAGNIFICATION / EDITION PROCESSING

GAMMA CORRECTION

MTF CORRECTION
• SMOOTHING
• EDGE EMPHASIS

TO LASER PRINTER PORTION

SIGNAL PROCESSING PORTION

C P U 2

C P U 1

LINE MEMORY

EAST Browser - L10: (6) 8 and mov$3... | US 5926570 A | Tag: S.T1 | Doc: 5/6 (SORTED) | Format: KWIC

File Edit View Tools Window Help

——— KWIC ———

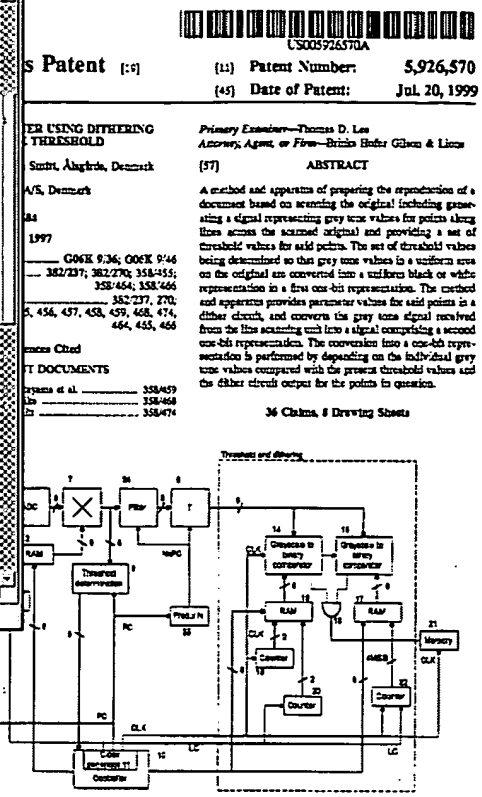
Detailed Description Text - DETX (5):

A threshold for the binary decision of a given pixel ("0" for black, "1" for white) should be set in such a way that if it belongs to the foreground of the scanned document, e.g. is significantly darker than other pixels in its neighborhood, it is called black. A technique useful for that purpose is called adaptive or dynamic thresholding and this technique is e.g. described in "Image Thresholding for Optical Character Recognition and Other Applications requiring Character Image Extraction" from IBM J. RES. DEVELOP. vol 27, no.4, 1983, by J. M. White and G. D. Rohrer. It should be noted that the terms "adaptive thresholding" and "adaptive thresholding circuit" are to be interpreted very broadly in the present application, covering the use of adaptive threshold techniques based on e.g. the moving average, area average, local average or statistical distribution of the grey tones represented in the scanned data. The threshold determination is performed on-line, i.e. the threshold values are updated simultaneously with data being scanned. A preferred way of doing so is described in the U.S. Pat. No. 5,377,020 assigned to the assignee of this case and hereby incorporated by reference.

Current US Cross Reference Classification - CCXR (2):

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
4	☐	P	US 5253083 A	19931012	Image re
5	☐	P	US 5926570 A	19990720	Optical sc
6	☐		US 5777756 A	19980707	Video prc and redu



US005926570A

s Patent [19]

[11] Patent Number: 5,926,570

[45] Date of Patent: Jul. 20, 1999

ER USING DITHERING
THRESHOLD

Smitt, Ålgårde, Denmark

A/S, Denmark

84

1997

G06K 9/36; G06K 9/46

382/237; 382/270; 358/455; 358/464; 358/466

382/237, 270; 5, 456, 457, 458, 459, 468, 474, 464, 455, 466

ences Cited

T DOCUMENTS

ayama et al. 358/459
kio 358/468
in 358/474

Primary Examiner—Thomas D. Lee
Attorney, Agent, or Firm—Brinks Hofer Gilson & Lione

[57] ABSTRACT

A method and apparatus of preparing the reproduction of a document based on scanning the original including generating a signal representing grey tone values for points along lines across the scanned original and providing a set of threshold values for said points. The set of threshold values being determined so that grey tone values in a uniform area on the original are converted into a uniform black or white representation in a first one-bit representation. The method and apparatus provides parameter values for said points in a dither circuit, and converts the grey tone signal received from the line scanning unit into a signal comprising a second one-bit representation. The conversion into a one-bit representation is performed by depending on the individual grey tone values compared with the present threshold values and the dither circuit output for the points in question.

36 Claims, 8 Drawing Sheets

TITLE: Video processing apparatus with multiple image signal integration and reduction for decreasing noise

——— KWIC ———

Current US Cross Reference Classification - CCXR (4):
358/463

Other Reference Publication - OREF (2):
Gelb, A. edt. (1974) Applied Optical Estimation, Technical Staff, The Analytic Sciences Corporation, M.I.T. Press, Cambridge, Mass. "Moving Average to Decrease Noise", Real Time Video Image Processing, Quantex Corporation (no date given).

	U	1	Document ID	Issue Date	
5	☐	☑	US 5926570 A	19990720	Optical sc
6	☐	☐	US 5777756 A	19980707	Video pro and reduc

US005777756A

Patent [19]

[11] Patent Number: 5,777,756

[45] Date of Patent: Jul. 7, 1998

NG APPARATUS WITH SIGNAL INTEGRATION FOR DECREASING

Hideki Kawasaki, Japan

peration, Tokyo, Japan

995

pplication Data

54,213, Apr. 30, 1993, abandoned.

ign Priority Data

——— 4-127632

——— H04N 1/40

. 358/458; 358/460; 358/463; 8; 348/619; 348/701; 382/254

——— 358/479, 463, 909, 167, 155, 156, 157, 455, 618, 619, 620, 627, 699, 700, 133, 143, 241, 364; 382/254; H04N 1/40

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[4,581,643 4/1986 Pratch et al. ——— 348/620
[4,876,734 10/1989 Kawamura ——— 382/54
[4,987,481 1/1991 Spears et al. ——— 348/620
[5,019,908 5/1991 Ito ——— 348/620
[5,305,051 4/1994 Lewayne et al. ——— 348/31
[5,442,462 8/1995 Guissin ——— 358/463

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Rabiner, L.R. & Gold, B. (1975) Theory & Application of Digital Signal Processing. Prentice-Hall In Englewood Cliffs, N.J., pp. 205-209.

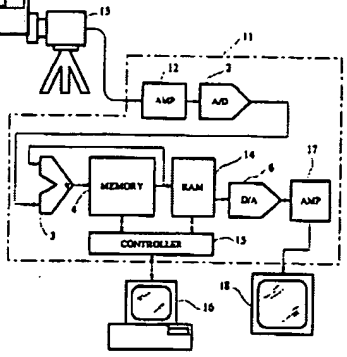
Gelb, A. edt. (1974) Applied Optical Estimation, Technical Staff, The Analytic Sciences Corporation, M.I.T. Press, Cambridge, Mass. "Moving Average to Decrease Noise", Real Time Video Image Processing, Quantex Corporation (no date given).

Primary Examiner—Thomas L. Stoll

[57] ABSTRACT

A video processing apparatus uses multiple image signal integration and reduction for decreasing noise. A television camera picks up an image of a still object and outputs image signals repetitively. An adder adds each newly outputted signal to the sum of previously outputted image signals stored in a memory and stores each new sum of image signals in the memory. A circuit divides each new sum of image signals by the number of times the adder has performed additions, thereby providing a signal that is displayed on a monitor.

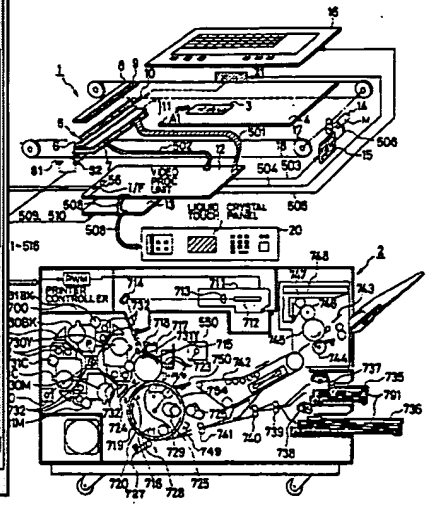
3 Claims, 3 Drawing Sheets



film is more than 100 to less than 400 or 400 or more, and depresses a shading start button to cause the projector lamp to light on at a reference light-on voltage V.sub.1. The cyan filter 223 serves to cut the color component of the orange base of a color negative film and adjust the color balance of a color sensor having R, G and B filters. Also, since shading data is obtained from the unexposed portion, a wide dynamic range can be obtained even in the case of color negative films. In the case of films other than color negative films, the operator sets a film carrier 215' having no filter or an ND filter for cutting infrared and ultraviolet rays into the projector and depresses a shading start key on the liquid crystal touch panel to cause the projector lamp 214 to light on at a reference light-on voltage V.sub.2. In practice, after the operator performs selection of negative film or positive film, switchover between the reference light-on voltages V.sub.1 and V.sub.2 may be automatically performed. Subsequently, the scanning unit moves to a central portion of an image projected area, and supplies to a RAM 78' shading data constituted by an averaged value of R, G and B equivalent to one or more lines of CCDs to put off the projector lamp.

Current US Cross Reference Classification - CCXR (1):
358/461

FIG. 1



Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
7			US 6330345 B1	20011211	Automatic
8			US 4922335 A	19900501	Color film
9			US 5845017 A	19981201	Digital im using dist

Brief Summary Text - BSTX (15):

The present intention is also intended for an image scan reader having the function of correcting the nonuniformity. According to the present invention, the image scan reader comprises (1) supporting means for supporting an original, (2) a white reference plate attached to the supporting means, (3) linear photosensor array means provided to face the supporting means, (4) means for relatively moving the supporting means and the linear photosensor array, (5) means for enabling the means (3) and (4) to detect distribution of optical densities on the white reference plate for M scanning lines, where M is an image integer satisfying the condition M=n+m and each of n and m is an integer larger than one, (6) means for averaging the distribution for n scanning lines within the M scanning lines to generate a first averaged data, (7) means for averaging the distribution for the other m scanning lines within the M scanning liens to generate a second averaged data, (8) comparing means for comparing the first and second averaged data with each other to select maximum value of the first and second averaged data for each position along a scanning line so that a set of maximum values are obtained, (9) means for generating a white reference data in accordance with the set of the maximum values, (10) means for enabling the means (3) and (4) to read an image of the original for each scanning line, to thereby generate an original image data, and (11) means for correcting the original image data in accordance with the white reference data.

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
20	☐	☐	US 6707950 B1	20040316	Method fo chain
21	☐	☑	US 5062144 A	19911029	Method o non-unifo
22			US 5926570 A	19990720	Optical sc

s Patent [19]

[11] Patent Number 5,062,144
[45] Date of Patent: Oct. 29, 1991

TAINING WHITE
EA USED FOR
ON-UNIFORMITY IN
C CELL ARRAY

Murakami, Tenjikuhamachi,
es Screen Mfg. Co. Ltd., Japan

1989
ation Priority Data
63-45867
G06K 9/00
382/52; 358/461; 358/464
358/461, 464; 382/52, 382/53
ences Cited
T DOCUMENTS
358/461
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382/53
358/461

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4,972,502 11/1990 Kamata et al. 382/52

FOREIGN PATENT DOCUMENTS

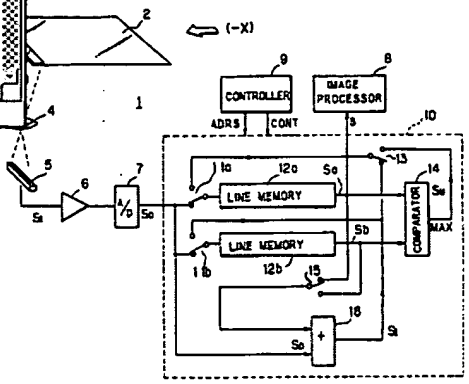
57-41773 3/1982 Japan .
58-100956 6/1983 Japan .
59-131266 6/1984 Japan .

Primary Examiner—Leo H. Boudreau
Assistant Examiner—Robert Kheerna
Attorney, Agent, or Firm—Ostrolenk, Faber, Gerb & Soffen

[57] ABSTRACT

In an image scan reader, a white reference plate is attached to a transparent plate on which an original is to be placed. Different regions are defined on the reference plate and respective optical densities on a plurality of scanning lines ($L_{1,1}$-$L_{1,n}$, $L_{M-1,1}$-$L_{M-1,n}$) are detected and averaged within each region (R_A, R_B). The maximum averaged densities are selected for each given pixel position to be used for correcting the non-uniformity of CCD cells which are employed in reading the white reference plate and the image of the original.

12 Claims, 3 Drawing Sheets



EAST Browser - L13: (26) 12 and mov$3... | US 5995248 A | Tag: S | Doc: 9/26 (SORTED) | Format : KWIC

File Edit View Tools Window Help

US-PAT-NO: 5995248

DOCUMENT-IDENTIFIER: US 5995248 A

TITLE: Image forming device and method having MTF correction

——— KWIC ———

Detailed Description Text - DETX (69):

The smoothing with smoothing filters is performed to reduce image noise by performing moving average with weighting addition on the image data of the periphery pixels of a central pixel, so that a smooth image can be reproduced.

Current US Cross Reference Classification - CCXR (12):

382/274

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
8	☐	☐	US 4811090 A	19890307	Image en capability
9	☐	☐	US 5995248 A	19991130	Image for
10			US 5835614 A	19981110	Image pro

US005995248A

s Patent [19]

[11] Patent Number: 5,995,248

[45] Date of Patent: *Nov. 30, 1999

D DEVICE AND METHOD
)RRECTION

Katori, Toyokawa; Yoshinobu
Aichi-ken; Masahiro Kouzaki,
i; Yukihiko Okuno;
ki Hirata, both of Toyokawa,
pan

Co., Ltd., Osaka, Japan

nt issued on a continued pros-
application filed under 37 CFR
and is subject to the twenty year
erm provisions of 35 U.S.C.
)

64

, 1997

reign Application Priority Data

an ——— 8-066648

——— H04N 1/46

— 358/501; 358/401; 358/406;
48; 358/455; 358/456; 358/530;
532; 358/538; 382/167; 382/274

——— 358/406, 447,
2, 451, 504, 501, 456, 298, 459,
48, 532, 538, 530; 382/157, 274

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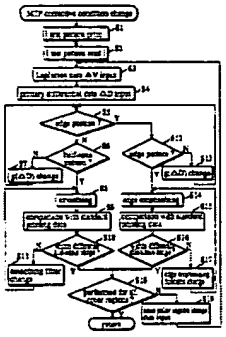
61-082963	4/1986	Japan .
61-082965	4/1986	Japan .
61-082966	4/1986	Japan .
61-244773	6/1986	Japan .
4-342770	11/1992	Japan .

Primary Examiner—Christopher S. Kelley
Assistant Examiner—Shaela Chawan
Attorney, Agent, or Firm—Sidley & Austin

[57] ABSTRACT

A test pattern comprising a half-tone pattern portion and an edge pattern portion printed according to standard printing data is read by a CCD scanner. A pattern discriminator detects the positions of the half-tone pattern portion and the edge pattern portion. In accordance with a prescribed edge detection criteria using the primary differential data AD of density determined by primary differential filters, the CPU determines whether the inputted image data correspond to a uniform density region or whether the inputted image data correspond to an edge portion. If the region discrimination result is different from the result of the pattern detection, the edge detection criteria are changed. The image data is then subjected to MTF correction, and conditions for smoothing or edge emphasizing are altered so that the difference between the corrected image data and the standard printing data remains within a allowable range.

16 Claims, 11 Drawing Sheets



A.sub.i,j in a window size of W pixels by H scan lines are used by the seco stage processing circuit 18 to compute the second stage average values B.sub.i,j for storage in the second stage average output 20. Preferably, as shown in FIG. 3, a running block 40 of the first stage average values A.sub is processed by the second stage processing circuit 18 to generate the se stage average values B.sub.i,j. The running block 40 essentially frames p locations of the first stage average buffer 16 to provide a context having a width of W pixels and a height of H scan lines. It is to be appreciated that the first stage average values A.sub.i,j are retrieved from the buffer 16 by the second stage processing circuit 18 in a manner so that the running blo "progresses" in the pixel direction along the scan lines or to the right as viewed in FIG. 3 by a single pixel column at a time. After the running bloc is "moved" to the rightmost edge of the first stage average values A.sub.i,j stored in the first stage average buffer 16, the block is shifted downwardly and to the extreme left. The running block essentially moves in a raster-lik fashion repeatedly to retrieve video values from the next set of scan lines the first stage average buffer 16.

Current US Cross Reference Classification - CCXR (2):
382/274

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
17			US 5872867 A	19990216	Method a
18		☑	US 6631215 B1	20031007	Method a correctio
19			US 6574362 B1	20030603	Method a image

(10) Patent No.: US 6,631,215 B1
et al. (45) Date of Patent: Oct. 7, 2003

OD AND APPARATUS FOR EMENTING INTEGRATED CAVITY T CORRECTION IN SCANNERS

rs: Jeng-nan Shiau, Webster, NY (US); Raymond J. Clark, Webster, NY (US); Stuart A. Schweid, Pittsford, NY (US); Terri A. Clingerman, Palmyra, NY (US)

e: Xerox Corporation, Stamford, CT (US)

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

lo.: 09/448,009

Nov. 23, 1999

.7 ..... G06K 9/40
L 382/260; 358/3.27; 382/274; 382/279
f Search 358/447, 3.27; 382/274, 260, 275, 279, 309

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5,251,272 A 10/1993 Hino et al. 382/274
5,404,232 A * 4/1995 Selby 358/406
5,790,281 A 8/1998 Knox et al. 358/504

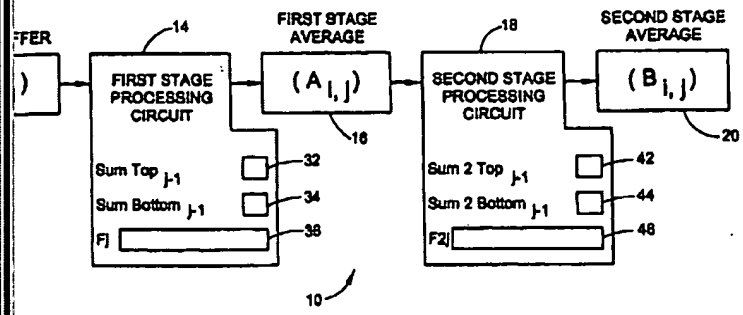
* cited by examiner

Primary Examiner—Timothy M. Johnson
(74) *Attorney, Agent, or Firm*—Fay, Sharpe, Fagan, Minnich & McKee, LLP

(57) ABSTRACT

A method and apparatus are provided for determining a weighted average measured reflectance parameter R_{ij} for pixels in an image for use in integrated cavity effect correction of the image. For each pixel of interest $P_{i,j}$ in the image, an approximate spatial dependent average $A_{i,j}$, $B_{i,j}$ of video values in a region of W pixels by H scan lines surrounding the pixel of interest $P_{i,j}$ is computed by convolving video values $V_{i,j}$ of the image in the region with a uniform filter. For each pixel of interest $P_{i,j}$ a result of the convolving step is used as the reflectance parameter R_{ij}. The apparatus includes a video buffer for storing the pixels of the original scanned image, and first and second stage average buffers for storing the computed approximate spatial dependent averages $A_{i,j}$, $B_{i,j}$. First and second stage processing circuits respectively generate the first and second stage average values $A_{i,j}$, $B_{i,j}$ by convolving the video values of the image in a preselected region with a uniform filter.

17 Claims, 3 Drawing Sheets



-------- KWIC --------

Brief Summary Text - BSTX (22):
For each elementary sensor, the corrective terms of the dark current and of the gain are obtained by processing a large number of signals delivered by each elementary sensor, to minimize the effects of the temporary noise of the elementary sensor or the radiation flux. These signals provided by each sensor can be processed according to a true average method or else according to a so-called moving or recursive average method.

Brief Summary Text - BSTX (24):
In the example which is described below, the dark current values of each of the sensors of a linear detector or bar detector DB are determined by a moving average method.

Current US Cross Reference Classification - CCXR (1):
382/254

Details | Text | Image | HTML | KWIC

	U	1	Document ID	Issue Date	
24	☐	☐	US 5120950 A	19920609	Process and corre
25	☐	☐	US 5079698 A	19920107	Transillun tumors ar image of
26			US 5777756 A	19980707	Video prc and redu

US005120950A
s Patent [19] [11] Patent Number: 5,120,950
[45] Date of Patent: Jun. 9, 1992

RRECTION OF SIGNALS
R RADIATION DETECTOR
ON DEVICE USING THIS

ntiers, Verrppe; Paul Petit, both of France
ue Tebas Electriciens, ges Billancourt, France

2, 1990
ction Priority Data
ces 89 11103
..... H01J 40/14
..... 250/208.1; 382/50
..... 250/208.1, 208.2, 208.3, 362, 563; 356/431; 382/50, 53; 358/108, 163
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..... 250/214
owitch 250/208.1
ewara et al. 250/208.5

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0346874 12/1989 European Pat. Off. .
2570527 3/1986 France .

Primary Examiner—David C. Nelms
Assistant Examiner—Que T. Le
Attorney, Agent, or Firm—Oblon, Spivak, McClelland, Maier & Neustadt

[57] ABSTRACT

A process for the development of a corrective term, process which can be applied during the acquisition of signals of analog measurements (S1 to Sn) of a radiation detector (21) by an acquisition device (22). Measuring signals (S1 to Sn) are corrected then transmitted to acquisition device (22) in digital form.
According to the invention, the measuring signals (S1 to Sn) are corrected analogically before transmitting them to acquisition device (22) by a main analog-to-digital converter (31). This makes it possible to reduce the number of bits required for analog-to-digital converter (31). The process of the invention applies in particular in correcting measuring signals (S1 to Sn) as a function of the dark current.

12 Claims, 2 Drawing Sheets